MITSUBISHI Electric Corporation MELSEC FX2N Positioning Controller Series CPU Direct Driver

Supported version TOP Design Studio V1.4.3 or higher



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We would like to thank our customers for using M2I's "Touch Operation Panel (M2I TOP) Series". Read this manual and familiarize yourself with the connection method and procedures of the "TOP and external device".

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Describes how to set up communication for external devices.

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Describes the cable specifications required for connection.

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Refer to this section to check the addresses which can communicate with an external device.



1. System configuration

The system configuration of TOP and "MITSUBISHI Electric Corporation - MELSEC FX2N Positioning Controller Series" is as follows:

Series	СРИ	Link I/F	Communication method	Communication setting	Cable
MELSEC-FX	FX2N-10GM FX2N-20GM	CPU Direct	RS-422 (4 wire)	3. TOP communication setting 4. External device setting	5. Cable table

■ Connection configuration

• 1:1 (one TOP and one external device) connection





2. External device selection

■ Select a TOP model and a port, and then select an external device.

PLC select [CO	M1]				
Filter : [All]			\sim	Search :	
			,	Model	Vendor
Vendor		Model			
M2I Corporation		^ 🌮	MELSEC Q Series		
MITSUBISHI Electric Corp	oration	8	MELSEC FX Series		
OMRON Industrial Autom	ation	8	MELSEC AnN/AnS Series		
LS Industrial Systems			MELSEC AnA/AnU Series		
MODBUS Organization		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	MELSERVO J2 Series		
SIEMENS AG.					
Rockwell Automation			MELSERVO J3 Series		
GE Fanuc Automation			MELSERVO J4 Series		
PANASONIC Electric Work	s		MELSEC FX2N-10/20GM	Series	
YASKAWA Electric Corpor	ation	\$	MELSEC iQ-F Series		
YOKOGAWA Electric Corp	oration				
Schneider Electric Industr	ies				
KDT Systems					
RS Automation		~			
PLC Setting[MELSE		0/20GM 9	Series]		
Alias Name :	PLC1	0/20GM 9			
Alias Name : Interface :	PLC1 CPU Direct	0/20GM \$	Series]		mm Manual
Alias Name : Interface :	PLC1 CPU Direct CPU Direct		~	Co	mm Manual
Alias Name : Interface : Protocol : String Save Mode :	PLC1 CPU Direct CPU Direct First LH HL		>	Co	mm Manual
Alias Name : Interface : Protocol :	PLC1 CPU Direct CPU Direct First LH HL	Chi	>	Co	mm Manual
Alias Name : Interface : Protocol : String Save Mode :	PLC1 CPU Direct CPU Direct First LH HL D ~	Ch	↓ ↓ ange	Co	mm Manual
Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : AN Change Condition :	PLC1 CPU Direct CPU Direct First LH HL D ~	Ch	>		mm Manual
Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : AN Change Condition :	PLC1 CPU Direct CPU Direct First LH HL D ~ TimeOut	Ch	∼ ∼		
Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition :	PLC1 CPU Direct CPU Direct First LH HL D V TimeOut Condition	5	∼ ∼		
Allas Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : AN Change Condition :	PLC1 CPU Direct CPU Direct First LH HL D ~ TimeOut Condition	Chu 5	∼ ∼		
Allas Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : Change Condition : Primary Option Timeout	PLC1 CPU Direct CPU Direct First LH HL D ~ TimeOut Condition	Chu 5 msec msec	∼ ∼		
Alias Name : Alias Name : Interface : Protocol : String Save Mode : String Save Mode : Operate Condition : AN Change Condition : Change Condition : Primary Option Timeout Send Wait	PLC1 CPU Direct CPU Direct First LH HL D ~ TimeOut Condition	Chu 5	∼ ∼		
Alias Name : Alias Name : Interface : Protocol : String Save Mode : String Save Mode : Operate Condition : AN Change Condition : Change Condition : Primary Option Timeout Send Wait	PLC1 CPU Direct CPU Direct First LH HL D ~ TimeOut Condition	Chu 5 msec msec	∼ ∼		
Alias Name : Alias Name : Interface : Protocol : String Save Mode : String Save Mode : Operate Condition : AN Change Condition : Change Condition : Primary Option Timeout Send Wait	PLC1 CPU Direct CPU Direct First LH HL D ~ TimeOut Condition	Chu 5 msec msec	∼ ∼		
Alias Name : Alias Name : Interface : Protocol : String Save Mode : String Save Mode : Operate Condition : AN Change Condition : Change Condition : Primary Option Timeout Send Wait	PLC1 CPU Direct CPU Direct First LH HL D ~ TimeOut Condition	Chu 5 msec msec	∼ ∼		
Alias Name : Alias Name : Interface : Protocol : String Save Mode : String Save Mode : Operate Condition : AN Change Condition : Change Condition : Primary Option Timeout Send Wait	PLC1 CPU Direct CPU Direct First LH HL D ~ TimeOut Condition	Chu 5 msec msec	∼ ∼		
Alias Name : Alias Name : Interface : Protocol : String Save Mode : String Save Mode : Operate Condition : AN Change Condition : Change Condition : Primary Option Timeout Send Wait	PLC1 CPU Direct CPU Direct First LH HL D ~ TimeOut Condition	Chu 5 msec msec	∼ ∼		

Settings		Contents			
ТОР	Model	Check the TOP display and process to select the touch model.			
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "MITSUBISHI Electric Corporation". Select an external device to connect to TOP. Model Interface Protocol MELSEC FX2N-10/20GM Series CPU Direct CPU Direct			
	PLC				
		Please check the system configuration connect is a model whose system car		external device you want to	

대한민국대표 터치패널 Touch Operation Panel

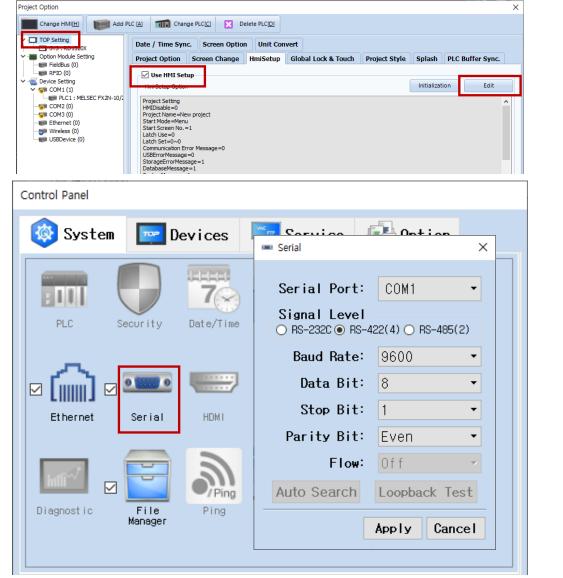
3. TOP communication setting

The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

- [Project > Project Property > TOP Setting] → [Project Option > "Use HMI Setup" Check > Edit > Serial]
 - Set the TOP communication interface in TOP Design Studio.



Items	TOP External device		Remarks
Signal Level (port)	DC 422	RS-422	Fixed
	RS-422	(CPU port)	Fixed
Baud Rate	9600		Fixed
Data Bit	8		Fixed
Stop Bit	1		Fixed
Parity Bit	Even		

* The above settings are examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.



(2) Communication option setting

- [Project > Project Property > Device Setting > COM > "PLC1 : MELSEC FX2N-10/20GM Series"]
 - Set the options of the MELSEC FX2N Positioning Controller Series communication driver in TOP Design Studio.

Project Option		×
Change HMI[H] Add PL	LC [A] TIT Change PLC[C] Delete PLC[D]	
 Charge Hintig TOP Setting SYS : RD 1520X Option Module Setting FieldBus (0) RFID (0) Device Setting COM1 (1) Ethernet (0) Wireless (0) USBDevice (0) 	PLC Setting[MELSEC FX2H-10/20GM Series] Alas Name : PLC1 Interface : CPU Direct Protocol : CPU Direct Protocol : CPU Direct String Save Mode : First LH HL Change Condition : ImmeOut Condition Immeout 300 msec Send Wait Immeout Simple msec Retry	Comm Manual
٢ >		Apply Close

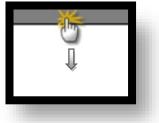
Items	Settings	Remarks
Interface	Select "CPU Direct".	Fixed
Protocol	Select "CPU Direct".	Fixed
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	endWait (ms) Set the waiting time between TOP's receiving a response from an external device and	
	sending the next command request.	



3.2. Communication setting in TOP

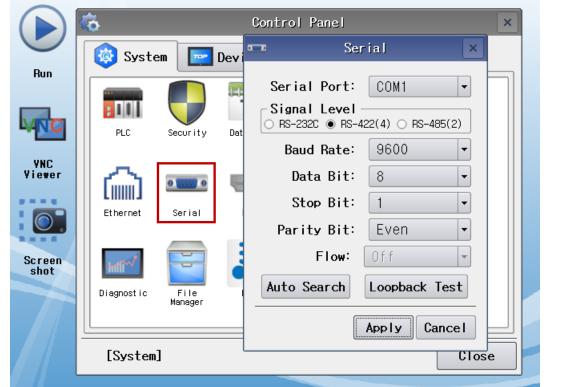
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

■ [Main Screen > Control Panel > Serial]



Items	ТОР	External device	Remarks
Signal Level (port)	DC 422	RS-422	Fined
	RS-422	(CPU port)	Fixed
Baud Rate	9600		Fixed
Data Bit	8		
Stop Bit	1		
Parity Bit		Even	Fixed

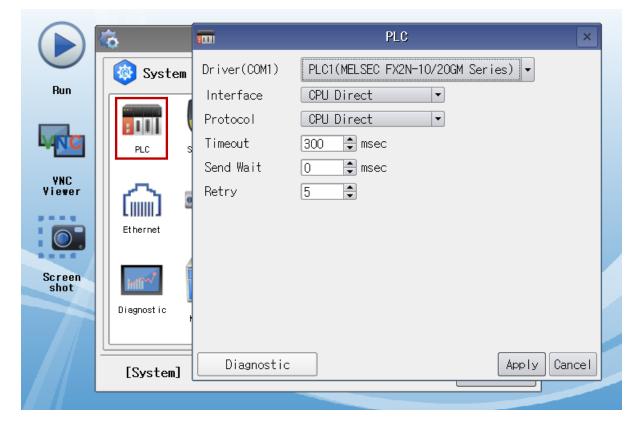
* The above settings are setting examples recommended by the company.

ltems	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.



(2) Communication option setting

■ [Main Screen > Control Panel > PLC]



Items	Settings	Remarks
Interface	Select "CPU Direct".	Fixed
Protocol	Select "CPU Direct".	Fixed
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and	
	sending the next command request.	



3.3 Communication diagnostics

■ Check the interface setting status between the TOP and an external device.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
- Check if the port (COM1/COM2) settings you want to use in [Control Panel > Serial] are the same as those of the external device.
- Diagnosis of whether the port communication is normal or not
- Touch "Communication diagnostics" in [Control Panel > PLC].
- The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

ОК	Communication setting normal
Time Out Error	Communication setting abnormal
	- Check the cable, TOP, and external device setting status. (Reference: Communication diagnostics sheet)

Communication diagnostics sheet

- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

ltems	Contents		Ch	ieck	Remarks	
System	How to connect the sys	item	OK	NG	1. Content on Connecti	
configuration	Connection cable name		OK	NG	1. System configuration	
ТОР	Version information	OK	NG			
	Port in use	OK	NG			
	Driver name		OK	NG		
	Other detailed settings		OK	NG		
	Relative prefix	Project setting	OK	NG		
		Communication	OK	NG	2. External device selection	
		diagnostics	ŬK	NG	3. Communication setting	
	Serial Parameter	Transmission	ОК	NG		
		Speed	ŬK	NG		
		Data Bit	OK	NG		
		Stop Bit	OK	NG		
		Parity Bit	OK	NG		
External device	CPU name		OK	NG		
	Communication port name)	name (module	ОК	NG		
	Protocol (mode)		OK	NG		
	Setup Prefix		OK	NG		
	Other detailed settings		OK	NG	4. External device setting	
	Serial Parameter	Transmission	ОК			
		Speed	ŬK	NG		
		Data Bit	OK	NG		
		Stop Bit	OK	NG		
		Parity Bit	OK	NG		
	Check address range		ОК	NG	<u>6. Supported addresses</u> (For details, please refer to the PLC vendor's manual.)	



4. External device setting

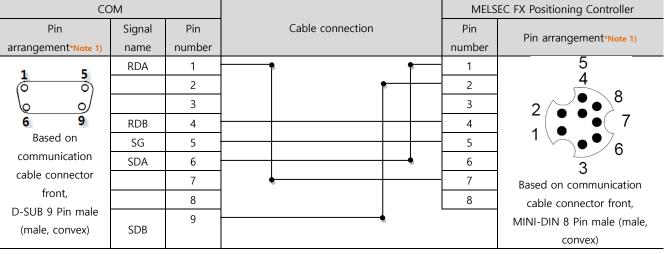
• The communication interface for the MELSEC FX2N-10/20GM Series CPU Port does not require a separate configuration.



5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device. (The cable diagram described in this section may differ from the recommendations of "Mitsubishi Electric Corporation")

■ **RS-422** (1:1 connection)



*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.



6. Supported addresses

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

Туре	Remarks	Bit Address	Word Address	32 bit	Property
Input	Bit	X000 – X067	X000 – X067		*Note 1)
		X372 – X377	X372 – X377		
Output	Bit	Y000 – Y067	Y000 – Y067		*Note 1)
Internal relay	Bit	M0000 - M0511	M0000 – M0511		*Note 2)
Special relay	Bit	M9000 – M9175	M9000 – M9175	L/H*Note 4)	*Note 2)
Data register	Word	D0000.00 - D3999.15	D0000 – D3999		
File register	Word	D4000.00 - D6999.15	D4000 – D6999	1	*Note 3)
Special register	Word	D9000.00 - D9599.15	D9000 – D9599	1	

*Note 1) Octal notation

*Note 2) Registers as a multiple of 16 when using word as the M device.

*Note 3) Requires separate configuration of "PARA.101" in order to use the file register.

*Note 4) When using 32 bit, saves 16 bit data of registered addresses and any subsequent addresses to the bottom and top, respectively.

Ex) If D00100;s data is "1234", then given that D00101's data is "5678", 32 bit will be used for D00100

Items	16BIT		32BIT	
Address	D00100	D00101	D00101	
Data (hexadecimal)	1234	5678	56781234	